Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Complete if Known

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 2 of 5

JUN 1 9 2003

| required to recipions to a concessor. | A KNOWLEDGE BEIGGS IL CON INCOME OF THE CONTEST CONTES |  |  |
|---------------------------------------|--|--|--|
|                                       | Complete if Known  |  |  |
| Application Number                    | 10/092,158   |  |  |
| Filing Date                           | March 5, 2002  |  |  |
| First Named Inventor                  | Wies, Evan F., et al.  |  |  |
| Art Unit                              | 2462 2142  |  |  |
| Examiner Name                         | Net Yet Assigned Har V. Nguyer   |  |  |
| Attorney Docket Number                | IMM062C  |  |  |

| F                     | 5            |                           | Foreign Patent Document |                                  |                                | Name of Patentee or                | Pages, Columns, Lines,                             |
|-----------------------|--------------|---------------------------|-------------------------|----------------------------------|--------------------------------|------------------------------------|--|
| Examiner<br>Initials* | Cite<br>No.1 | Country Code <sup>3</sup> | Number <sup>4</sup>     | Kind Code <sup>s</sup> (# known) | Publication Date<br>MM-DD-YYYY | Applicant of Cited  Document       | Where Relevant Passages or Relevant Figures Appear |
| ATN                   | 38           | EP                        | 0349086                 |                                  | 1/3/1990                       | Stork Kwant B.V.                   | 1  |
| 1                     | 39           | JP                        | 01-003664               |                                  | 7/19/1990                      | Taito Corporation                  | 1  |
|                       | 40           | JP                        | 02-109714               |                                  | 1/13/1992                      | Epoch Co. and Key-<br>Planning Co. | 1  |
| 1                     | 41           | JP                        | 05-193862               |                                  | 1/27/1995                      | Sega Corporation                   | 1  |
| AP                    | 42           | JP                        | 04-007371               |                                  | 8/3/1993                       | Taito Corporation                  | 1  |

## **RECEIVED**

JUN 2 3 2003

**Technology Center 2100** 

| Examiner<br>Signature | Jann | hm | Date<br>Considered | 9/5/2007 |
|-----------------------|------|----|--------------------|----------|

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

1

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Kind Codes of U.S. Patent Documents at <a href="www.uspto.gov">www.uspto.gov</a> or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as Indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

EADEMAR Destitute for form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 3 of 5

|                        | Complete if Known    |                          | ľ       |
|------------------------|----------------------|--------------------------|---------|
| Application Number     | 10/092,158           | -                        |         |
| Filing Date            | March 5, 2002        | DECEIVE                  | r       |
| First Named Inventor   | Wies, Evan F., et al | RECEIVE                  | L       |
| Art Unit               | 2152                 |                          | ŀ       |
| Examiner Name          | Not Yet Assigned     | <del>JUN 2-3-20</del> 03 |         |
| Attorney Docket Number | IMM062C              | Technology Center        | ์<br>วา |
|                        |                      | Technology Ochica        | ۲.      |

|   |   | OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS   |   |
|---|---|---|---|
| Examiner   Cite   item (book, magazine, journal, seri |   | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | Т |
| 142   | 43  | ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989.   |   |
|   | 44  | ADELSTEIN, " Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, Advances in Robotics, Edited by H. Kazerooni, pp. 1-12, 1992.  |   |
|   | 45  | AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.   |   |
|   | 46  | BAIGRIE, "Electric Control Loading - A Low Cost, High Performance Alternative," Proceedings, pp. 247-254, November 6-8, 1990.   |   |
|   | 47  | BEJCZY et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," International Computer Technology Conference, The American Society of Mechanical Engineers, San Francisco, CA, August 12-15, 1980.   |   |
|   | 48  | BEJCZY, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980.  |   |
|   | 49  | BEJCZY, "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISM-IFTOMM, Sep. 8-12, 1981.   |   |
|   | 50  | BEJCZY, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987.   |   |
|   | BEJCZY et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, House TX, July 25-27, 1989.       |   |   |
|   | 52  | BROOKS et al., "Hand Controllers for Teleoperation - A State-of-the-Art Technology Survey and Evaluation," JPL Publication 85-11; NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985.   |   |
|   | 53  | BURDEA et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, 05/02/1993.    |   |
|   | CALDWELL et al., "Enhanced Tactile Feedback (Tele-Taction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-980, 1993. |   |   |
|   | 55  | *Cyberman Technical Specification,* Logitech Cyberman SWIFT Supplement, 4/5/1994.   |   |
|   | 56  | EBERHARDT et al., "OMAR - A Haptic display for speech perception by deaf and deaf-blind individuals," IEEE Virtual Reality Annual International Symposium, Seattle, WA, Sep. 18-22, 1993.   |   |
| AN  | 57  | EBERHARDT et al., "including Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1, ASME 1994.  |   |

| WINLIB01 981569.1     |         |                    |          |
|-----------------------|---------|--------------------|----------|
| Examiner<br>Signature | Myrahad | Date<br>Considered | 9/5/2007 |

EXAMINER: Initial if reference densidered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

<sup>&</sup>lt;sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Under the rest of the state of

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

|                        | Complete if Known     |                          |
|------------------------|-----------------------|--------------------------|
| Application Number     | 10/092,158            |                          |
| Filing Date            | March 5, 2002         | DECEMEN                  |
| First Named Inventor   | Wies, Evan F., et al. | RECEIVE P                |
| Art Unit               | 2152                  |                          |
| Examiner Name          | Not Yet Assigned      | JUN 2 3 2003             |
| Attorney Docket Number | IMM062C               | echnology Center 2100    |
|                        | ·                     | contrology content miles |

|                        |              | OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS   |    |
|------------------------|--------------|---|----|
| Examiner<br>Initials * | Cite<br>No.1 | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | Τ² |
| Hay                    | 58           | GOBEL et al., "Tactile Feedback Applied to Computer Mice," International Journal of Human-Computer Interaction; Vol. 7, No. 1, pp. 1-24, 1995.  |    |
|                        | 59           | GOTOW et al., " Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337   |    |
|                        | 60           | HOWE, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992.                                       |    |
|                        | 61           | IBM Technical Disclosure Bullein, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990.  |    |
|                        | 62           | IWATA, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp 287-292, 1993.   |    |
|                        | 63           | JACOBSEN et al., "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," Intervention/ROV '91 Conference & Exposition, Hollywood, Florida, May 21-23, 1991.   |    |
|                        | 64           | JONES et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-156, 1990.  |    |
|                        | 65           | KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies.   |    |
|                        | 66           | KONTARINIS et al., "Display of High-Frequency Tactile Information to Teleoperators," Telemanipulator Technology and Space Telerobotics, Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993.  |    |
|                        | 67           | MARCUS, "Touch Feedback in Surgery," Proceedings of Virtual Reality and Medicine The Cutting Edge, Sep. 8-11, 1994.   |    |
|                        | 68           | MCAFFEE, "Teleoperator Subsystem/Telerobot Demonsdirator: Force Reflecting Hand Controller Equipment Manual," JPL D-5172, pp. 1- 50, A1-A36, B1-B5, C1-C38, January 1988.   |    |
|                        | 69           | MINSKY, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," Ph.D. Dissertation, MIT, June 1995.  |    |
| <b>V</b> .             | . 70         | NOLL, "Man-Machine Tactile," SiD Journal, July/August 1972 Issue.   |    |
| HW                     | 71           | OUH-YOUNG, " Force Display in Molecular Docking," Order No. 9034744, p. 1-369, 1990.  |    |

| WINLIBOL 981569:1     |     |                 |            |
|-----------------------|-----|-----------------|------------|
| Examiner<br>Signature | Man | Date Considered | 0 9/5/2007 |

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, OC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&#</sup>x27;Unique citation designation number. 2 Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number. Under u.v...

Under u.v...

Substitute for form 1449A/PTO

Attorney Docket Number

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

> (use as many sheets as necessary) of

Sheet

Complete If Known **Application Number** 10/092,158 Filing Date March 5, 2002 Wies, Evan F., et al. First Named Inventor Art Unit 2152 **Examiner Name** Not Yet Assigned IMM062C

|                    |   | OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS  |    |  |  |
|--------------------|---|--|----|--|--|
| Examiner Cite No.1 |   | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.    | T² |  |  |
| 42                 | 72  | OUH-YOUNG, "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, August 1995.   |    |  |  |
|                    | 73  | OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995. |    |  |  |
|                    | 74  | PATRICK et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," Cooperative Intelligent Robotics in Space, Rul J. deFigueiredo et al., Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990.               |    |  |  |
|                    | 75  | PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.   |    |  |  |
|                    | 76  | RABINOWITZ et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contactor area," Journal of The Acoustical Society of America, Vol. 82, No. 4, Ocotober 1987.   |    |  |  |
|                    | 77  | RUSSO, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives 08/14/1990, pp. 1-131, May 1990.   |    |  |  |
|                    | RUSSO, " Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, Advances i Robotics, pp. 63-70, ASME 1992.   |  |    |  |  |
|                    | 79  | SCANNELL, "Taking a Joystick Ride," Computer Currents, Boston Edition, Vol. 9, No. 11, November 1994.  |    |  |  |
|                    | 80  | SHIMOGA, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Expploration, Rensselaer Polytechnic Institute, Sep. 30 - Oct. 1, 1992.                          |    |  |  |
|                    | 81  | SNOW et al., " Model-X Force-Reflecting-Hand-Controller," NT Control No. MPO-17851; JPL Case No. 5348, pp. 1-4, 06/15/1989.  |    |  |  |
|                    | STANLEY et al., " Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSC-Vol. 42, Advances in Robotics, pp. 55-81, ASME 1992. |  |    |  |  |
|                    | 83  | TADROS, " Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators*, MIT Archive © Massachusetts Institute of Technology, pp. 1-88, February 1990.   |    |  |  |
| V                  | 84  | TERRY et al., "Tactile Feedback In A Computer Mouse," Proceedings of Fouteenth Annual Northeast Bloengineering Conference, University of New Hampshire, March 10-11, 1988.   |    |  |  |
| HN                 | 85  | YAMAKITA et al., "Tele-Virtual Reality of Dynamic Mechanical Model," Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC, July 7-10, 1992.  |    |  |  |

| WINLIBOL 981569.1     | $\leq$ |      |                    |          |
|-----------------------|--------|------|--------------------|----------|
| Examiner<br>Signature | 109    | when | Date<br>Considered | 9/5/2007 |
| $\overline{}$         |        |      |                    |          |

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. 2 Applicant is to place a check mark here if English language Translation is attached.